UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte HEINZ LUFT

Appeal 2007-2439
Application 10/089,668
Technology Center 3700

Decided: July 25, 2007

Before BRADLEY R. GARRIS, CATHERINE Q. TIMM, and LINDA M. GAUDETTE, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals the final rejection of claims 26-29 under 35 U.S.C. § 134. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

INTRODUCTION

Appellant claims a fuel injector for injecting fuel in an internal combustion engine (claim 26). The fuel injector has an adjusting body (40) placed in direct contact with a sleeve (24) so that a fuel amount flowing per

unit time through the fuel injector depends on a position of the adjusting body in the sleeve (claim 26; Figure 2, 3, and 4). Appellant indicates that including the adjusting body (40) permits flow rate of the fuel to be adjusted in a mechanical manner (Specification 3: 15-18).

Claims 26, 28, and 29 are illustrative:

26. A fuel injector for a fuel injection system of an internal combustion engine, in particular for direct injection of fuel into a combustion chamber of the engine, the fuel injector comprising:

an actuator;

a valve closing body to form a sealing seat with a valve seat face;

a valve needle mechanically linked to the actuator and to be acted upon by a restoring spring in a closing direction, to actuate valve closing body;

a sleeve to pre-stress the restoring spring; and

an adjusting body placed in direct contact with the sleeve so as to be adjustable so that a fuel amount flowing per unit of time through the fuel injector depends on a position of the adjusting body in the sleeve.

28. The fuel injector of claim 26, wherein the restoring spring is supported on an injection end of the sleeve.

29. The fuel injector of claim 27, wherein the position of the adjusting body is variable in the sleeve via a first adjusting tool.

The Examiner relies on the following prior art reference as evidence of unpatentability:

Boecking[1] WO 01/11220 A1 Feb. 15, 2001 (Aug. 1, 2000)

The rejection as presented by the Examiner is as follows:

1. Claims 26-29 are rejected under 35 U.S.C. § 102 as being unpatentable over Boecking.[2]

Appellant separately argues independent claim 26 and dependent claims 28 and 29. Accordingly, dependent claim 27 stands or falls with claim 26.

OPINION

35 U.S.C. § 102 REJECTION OVER BOECKING

INDEPENDENT CLAIM 26

The Examiner's construction of claim 26 includes, in relevant part, the following: (1) the claim 26 phrase "sleeve to pre-stress the restoring spring" corresponds to Boecking's part indicated by reference numeral 13 that abuts the nozzle spring 12 (Answer 3), and (2) the claim 26 phrase "an adjusting body placed in direct contact with the sleeve so as to be adjustable"

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[1] The Examiner relies on the equivalent US Patent 6,626,371 B1 for an English language translation of the German language WIPO document (WO 01/11220 A1). Appellant does not dispute the use of US Patent 6,626,371 B1 as an English language equivalent of the German language WIPO document. We refer to the US Patent 6,626,371 B1 in our opinion below.

[2] Appellant has not contested the availability of WO 01/11220 A1 under § 102(e) as asserted by the Examiner, and WO 01/11220 A1 is clearly available as prior art under § 102(a). Accordingly, any error on the part of the Examiner, regarding which section of 35 U.S.C. § 102 is applicable, is harmless.

corresponds to Boecking's bush 16 which moves during operation of the fuel injector (Answer 3).

Appellant argues that the Examiner has not established a prima facie case of anticipation because claim features are not disclosed by Boecking (Br. 3). Specifically, Appellant contends that Boecking fails to disclose "a sleeve to pre-stress the restoring spring" as recited in claim 26 (Br. 3). Appellant contends that the part indicated by reference numeral 13 of nozzle needle 5 in Boecking does not pre-stress nozzle spring 12 (Br. 3). Appellant argues that Boecking does not disclose "an adjustment body" as recited in claim 26 (Br. 4). Appellant further argues that Boecking's bush 16 (i.e., sleeve according to Appellant) is moveable, whereas Appellant's claimed invention has fixed sleeve 24 into which a moveable adjusting body 40 is inserted (Reply Br. 2).

We have considered all of Appellant's arguments and find them unpersuasive for the reasons indicated below.

During examination, "claims ... are to be given their broadest reasonable interpretation consistent with the specification, and ... claim language should be read in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re American Academy of Science Tech Center*, 367 F.3d 1359, 1364, 70 USPQ2d 1827, 1830 (Fed. Cir. 2004). Construing claims broadly during prosecution is not unfair to the applicant, because the applicant has the opportunity to amend the claims to obtain more precise claim coverage. *Id.*

Boecking discloses that nozzle spring 12 is pre-stressed between collar 17 and the end-face (13) (i.e., sleeve) of the nozzle needle 5 (Boecking, col. 4, ll. 13-24). The cooperation of the end-face 13 (i.e.,

sleeve) of nozzle needle 5 and the collar 17 on bush 16 operates to form a pre-stressed nozzle spring 12. Hence, we find, like the Examiner, that Boecking's end-face 13 (i.e., sleeve) does pre-stress the nozzle spring 12. Boecking discloses Appellant's argued claim feature.

Regarding Appellant's second argued distinction, "an adjusting body placed in direct contact with the sleeve so as to be adjustable," Boecking discloses this claim feature. As the Examiner indicates, Boecking discloses that bush 16 moves up and down in response to pressure changes to effect an opening or closing of the nozzle needle 5 (Boecking, col. 5, ll. 2-9). Moreover, Boecking shows that bush 16 is positioned within the end-face 13 (i.e., sleeve) of nozzle needle 5 (Boecking, Figures 1 and 2). Thus, Boecking discloses Appellant's second argued distinction.

Appellant's argument that his sleeve 24 is fixed and adjusting body 40 moves within the sleeve 24, whereas Boecking's "sleeve 16" (i.e., bush) is moveable (Reply Br. 2), is directed to features of the sleeve and adjusting body that are not claimed. Claim 26 does not recite that the sleeve is fixed or that the adjusting body moves within the sleeve (claim 26). Accordingly, Appellant's argument is not persuasive.

For the foregoing reasons, we determine that the Examiner has appropriately construed claim 26 in a broad and reasonable manner consistent with the Specification. *American Academy of Science*, 367 F.3d at 1364, 70 USPQ2d at 1830. Based on this claim construction, the Examiner has established that Boecking discloses Appellant's argued distinctions. We affirm the Examiner's § 102 rejection of argued claim 26 and non-argued claim 27.

CLAIM 28

Appellant argues that nozzle spring 12 of Boecking is supported on a non-injection end of control chamber 15 whereas claim 28 recites that the restoring spring is supported on an injection end of the sleeve (Br. 4).

We have considered Appellant's argument and find it unpersuasive for the reasons below.

The Examiner takes the position that Appellant has failed to indicate which end is the injection end and thus, "the broadest reasonable interpretation of 'injection end'" can include any "end" which is associated with "an injection" (Answer 7). The Examiner uses this construction of the claim term "an injection end" to determine that, since fuel is throttled into control chamber 15 via inlet throttle 19, the end-face 13 of nozzle needle 5 which abuts the nozzle spring 12 must be "an injection end" (Answer 7). We agree.

As noted above, claims are given their broadest reasonable interpretation consistent with the Specification during examination. *American Academy of Science*, 367 F.3d at 1364, 70 USPQ2d at 1830. An applicant "may demonstrate an intent to deviate from the ordinary and accustomed meaning of a claim term by including in the specification expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." *American Academy of Science*, 367 F.3d at 1365, 70 USPQ2d at 1831.

Appellant has not included in his Specification "expressions of manifest exclusion or restriction" that would lead us to conclude that "an injection end" has a different meaning than the ordinary and accustomed meaning given to it by the Examiner. We determine that the Examiner

reasonably construed "an injection end" to include the end-face 13 (i.e., sleeve) of nozzle needle 5 which includes inlet throttle 19 through which fuel is throttled (i.e., injected).

We affirm the Examiner's § 102 rejection of claim 28.

CLAIM 29

Appellant argues that Boecking does not disclose the claim feature "the position of the adjusting body is variable in the sleeve via a first adjusting tool" (Br. 5). Appellant further argues that Boecking's bush 16 moves by variation in fluid pressure not via an adjusting tool (Br. 5).

We have considered all of Appellant's arguments and find them unpersuasive for the reasons below.

The Examiner takes the position that claim 29 does not require the adjusting tool (Answer 7). Stated differently, the Examiner contends that claim 29 only requires that the adjusting body be capable of adjustment (Answer 7). We agree.

Claim 29 does not require an adjusting tool be part of the claimed fuel injector. As the Examiner indicates, Appellant discloses that the adjustment bolt 45 (i.e., adjusting tool) is removed from the fuel injector and the filter element 25 is replaced in the central recess 47 after adjustment (Specification 8: 26-29). This disclosure indicates that the adjustment tool is not part of the fuel injector. Rather, the claimed fuel injector need only have an adjusting body that is capable of being adjusted via an adjusting tool. *In re Schreiber*, 128 F.3d 1473, 1478, 44 USPQ2d 1429, 1432 (Fed. Cir. 1997).

In the present case, Boecking's fuel injector is capable of adjustment using the control valve member 22 and the rod positioned atop control valve

member 22. Specifically, when control valve member 22 opens, the pressure drops in the control chamber 15 while fuel continues to flow into the nozzle spring chamber 10 via fuel inlet 11 such that the pressure in spring chamber 10 is greater than in control chamber 15 (Boecking, col. 4, ll. 35-54). This causes the nozzle needle 5 to move upwardly and open the fuel orifice 7 (Boecking, col. 4, ll. 35-54). When the control valve member 22 closes, the fuel in spring nozzle chamber 10 is throttled through inlet throttle 25 such that auxiliary control chamber 24 fills first (Boecking, col. 4, ll. 63-67, col. 5, ll. 1-9). Thus, closing the control valve member 22 creates a higher pressure in auxiliary control chamber 24, which forces the bush 16 downwardly and lifts the bush 16 from its seat on retaining body 3 (Boecking, col. 5, ll. 1-9). Thus, control valve member 22 acts as an adjustment tool such that bush 16 (i.e., adjusting body) is capable of adjustment depending on the position of the control valve member 22 (i.e., adjustment tool).

Boecking's control valve member 22 acts hydraulically, instead of mechanically, to vary the position of the adjusting member. However, claim 29 does not require that the adjustment tool act in a particular manner to vary the position of the adjustment body.

For the foregoing reasons, we affirm the Examiner's § 102 rejection of claim 29.

DECISION

The Examiner's rejection of claims 26-29 under 35 U.S.C. § 102 as being unpatentable over Boecking is AFFIRMED.

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

sld/ls

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